A Closer Look at other Taxonomies of Learning: A Guide for Assessing Student Learning

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This report presented different taxonomies of learning that can be used by educators as their guide when planning for educational objectives, framing skills and competencies for students, and a guide in creating assessment tools. It covers descriptions and explanations of taxonomies with their features under their different levels. The conventional taxonomies were presented first such as the 1956 Bloom's taxonomy and the Revised Blooms Taxonomy. The alternative taxonomies also presented such as Gagne's taxonomy, Stiggins and Conklin's Taxonomy, Marzano's Dimension of Learning, and De Bono's Six Thinking Hats. Implications for instructional planning and assessing are further discussed.

Keywords: Learning taxonomy, domains of learning, Assessing student learning

In planning for instruction and developing a curriculum, the educator puts a prime importance in focusing the specific learner outcomes such as skills and competencies that needs to be developed. These statements usually come in the form of educational outcomes, goals, objectives, educational aims or learning intents. In order to provide evidence that these educational outcomes are met, different forms of assessment are conducted whether it is the traditional paper and pencil tests (binary type, multiple choice, short answer, etc.) or the alternative forms of assessment (performance-based, authentic assessment, portfolio assessment). Different learning taxonomies are generally used to frame specific skills that need to be measured by teachers. The most common taxonomic tool used by teachers in planning their lesson and writing items is Benjamin Bloom's (1956 taxonomy) cognitive skills which were later developed into the revised Bloom's taxonomy with the addition of a knowledge domain (see Anderson & Krathwohl, 2001).

The purpose of this report is to present the conventional taxonomies and some alternative ones used by teachers as a guide in creating assessment tools.

Bloom's Taxonomy

Bloom's taxonomy is composed of three domains: Cognitive, affective and psychomotor. Every time a teacher states objectives these four domains are present. Some behavioral terms for each domain are provided in order to guide teachers on what particular indicators can be used when planning for assessment. The most commonly used domain in creating paper and pencil tests are the cognitive domains (knowledge, comprehension, application, analysis, synthesis, evaluation). For more complex skills that cannot be captured through paper and pencil, a rubric can be used.

Table 1
Behavioral Terms for the Cognitive Domain

Cognitive level	Behavioral Terms
Knowledge	define, describe, identify, label, enumerate, match, outline, select, state, name, reproduce
Comprehension	Summarize, paraphrase, rephrase, convert, estimate, explain, generalize, paraphrase, infer, rewrite, compute
Application	Use, employ, give examples, changes, demonstrate, modify, predict, show, problem solving
Analysis	Relate, distinguish, differentiate, illustrate, separates, subdivides
Synthesis	Formulate, compose, produce, categorize, combine, create, devise, design, generate, organize, rearrange, reconstruct, reorganize, revise
Evaluation	Appraise, decide, justify, conclude, criticize, describe, defend

Table 2
Behavioral Terms for the Affective Domain

Affective Domain	Behavioral Terms
Receiving	Asks, chooses, describes, follows, gives, holds, locates, points to, relies, uses
Responding	Answers, assists, complies, conforms, greets, performs, practices, presents, recites, reports
Valuing	Completes, explains, initiates, invites, joins, justifies, proposes, shares, studies
Organization	Adheres, alters, arranges, defends, generalizes, integrates, orders, prepares, relates
Characterization	Acts, discriminates, displays, influences, modifies, proposes, qualifies, questions, revises, serves, solves, verifies

Table 3
Behavioral Terms for the Psychomotor Domain

Psychomotor Domain	
Imitation	Observes a skill and attempts to repeat it
Manipulation	Performs skill according to instruction rather than observation
Precision	Reproduces a skill with accuracy, proportion and exactness
Articulation	Combines more than one skill in sequence with harmony and consistency
Naturalization	Completes one or more skills with ease and becomes automatic with limited physical or mental exertion

Teachers are guided in stating learning intents and assessment based on six dimensions of cognitive process. Knowledge, with the lowest degree of complexity includes simple cognitive activity such as recall or recognition of information. The cognitive activity in comprehension includes understanding of the information and concepts, translating them into other forms of communication without altering the original sense, interpreting, and drawing conclusions from them. For application, emphasis is on students' ability to use previously acquired information and understanding, and other prior knowledge in new settings and applied contexts that are different from those in which it was learned. For learning intents stated at the Analysis level, tasks require identification and connection of logic, and differentiation of concepts based on logical sequence and contradictions. Learning intents written at this level indicate behaviors that indicate ability to differentiate among information, opinions, and inferences. Learning intents at the synthesis level are stated in ways that indicate students' ability to produce a meaningful and original whole out of the available information, understanding, contexts, and logical connections. Evaluation includes students' ability to make judgments and sound decisions based on defensible criteria. Judgments include the worth, relevance, and value of some information, ideas, concepts, theories, rules, methods, opinions, or products.

Comprehension requires knowledge as information is required in understanding it. A good understanding of information can facilitate its application. Analysis requires the first three cognitive activities. Both synthesis and evaluation require knowledge, comprehension, application, and analysis. Evaluation does not require synthesis, and synthesis does not require evaluation either.

Table 4
Alignment of Competence, Skill, and Behavioral Terms

Competence	Skill Demonstrated	Behavioral Term
Knowledge	• Observation and recall of information • Declarative knowledge • Mastery of subject matter	List, define, tell, describe, identify, show, label, collect, examine, tabulate, quote, name
Comprehension	• Understanding of information • Grasp meaning • Translate knowledge into new context • Interpret facts, compare, contrast • Order, group, infer causes • Predict consequences	Summarize, describe, interpret, contrast, predict, associate, distinguish, estimate, differentiate, discuss, extend
Application	• Use information • Use methods, concepts, theories in new situations • Solve problems using required skills or knowledge	Apply, demonstrate, calculate, complete, illustrate, show, solve, examine, modify, relate, change, classify, experiment, discover
Analysis	• Seeing patterns • Organization of parts • Recognition of hidden meanings • Identification of components	Analyze, separate, order, explain, connect, classify, arrange, divide, compare, select, explain, infer
Synthesis	• Use old ideas to create new ones • Generalize from given facts • Relate knowledge from several ideas • Predict, draw conclusions	Combine, integrate, modify, rearrange, substitute, plan, create, design, invent, what if?, compose, formulate, prepare, generalize, rewrite
Evaluation	• Compare and discriminate between ideas • Assess value of theories, presentations • Make choices based on reasoned argument • Verify value of evidence • Recognize subjectivity	Assess, decide, rank, grade, test, measure, recommend, convince, select, judge, explain, discriminate, support, conclude, compare, summarize

The Revised Bloom's Taxonomy

After 45 years since the birth of Bloom's original taxonomy, a revised version has come into the teaching practice, which was developed by Anderson and Krathwohl (2001). Statements that describe intended learning outcomes as a result of instruction are framed in terms of some subject matter content and the action required with the content. To eliminate the anomaly of unidimensionality of the statement of learning intents in their use of noun phrases and verbs altogether. There are two separate dimensions of learning: The knowledge dimension and the cognitive process dimension.

Knowledge Dimension has four categories, three of which include the subcategories of knowledge in the original taxonomy. The fourth, however, is a new one, something that was not yet gaining massive popularity at the time when the original taxonomy was conceived. It is new and, at the same time, important in that it includes strategic knowledge, knowledge about cognitive tasks, and self-knowledge.

Factual Knowledge

This includes knowledge of specific information, its details and other elements therein. Students make use of this knowledge to familiarize the subject matter or propose solutions to problems within the discipline. Factual knowledge is the basic elements that students must know to get acquainted with a discipline or solve problems within it. It can come in the form of a terminology like definitions, details, and elements like asking for examples of natural resources.

Conceptual Knowledge

This includes knowledge about the connection of information and other elements to a larger structure of thought so that a holistic view of the subject matter or discipline is formed. Students classify, categorize, or generalize ideas into meaningful structures and models. Conceptual knowledge deals with interrelationships among the basic elements within a larger structure that enable them to function together. The subtypes are classifications and categories (e. g., kinds of animals), principles and generalizations (e. g., law of supply and demand), and theorems and models (e. g., theory of evolution).

Procedural Knowledge

This category of knowledge dimension includes the knowledge in doing some procedural tasks that require specific skills and methods. Students also know the criteria for using the procedures in levels of appropriateness. Procedural knowledge involves knowledge on how to do something, and techniques and methods of specific skills. The subtypes are subject-specific skills and algorithms (e. g., computing for whole number division), subject-specific techniques and methods (e. g. steps in interviewing), criteria in determining when to use certain procedures (e. g., Polya's steps in problem solving).

Metacognitive Knowledge

This involves cognition in general as well as the awareness and knowledge of one's own cognition. Students know how they are thinking and become aware of the contexts and conditions within which they are learning. Metacogntion involves knowledge of cognition and awareness. The subtypes are strategic knowledge (e. g. use of heuristics), knowledge of cognitive tasks (e. g., knowledge cognitive demands of different tasks), and self-knowledge (awareness of one's own knowledge level).

The cognitive process dimension is where specific behaviors are pegged that is stated in active verbs. However, so that there is consistency in the description of specific learning behaviors, the categories in the original taxonomies which were labeled in noun forms are now replaced with their verb counterparts. Synthesis changed places with evaluation, both are now stated in verb forms.

Remembering. This includes recalling and recognizing relevant knowledge from long-term memory.

Understanding. This is the determination of the meanings of messages from oral, written or graphic sources.

Applying. This involves carrying out procedural tasks, executing or implementing them in particular realistic contexts.

Analyzing. This includes deducing concepts into clusters or chunks of ideas and meaningfully relating them together with other dimensions.

Evaluating. This is making judgments relative to clear standards or defensible criteria to critically check for depth, consistency, relevance, acceptability, and other areas.

Creating. This includes putting together some ideas, concepts, information, and other elements to produce complex and original, but meaningful whole as an outcome.

The use of the revised taxonomy in different programs has benefited both teachers and students in many ways (Ferguson, 2002; Byrd, 2002). The benefits generally come from the fact that the revised taxonomy provides clear dimensions of knowledge and cognitive processes in which to focus in the instructional plan. It also allows teachers to set targets for metacognition concurrently with other knowledge dimensions, which is difficult to do with the old taxonomy.

Table 1
Sample Objectives Using the Revised Taxonomy

The knowledge Domain		The Cogntive Domain						
		Remember	Understand	Apply	Analyze	Evaluate	Create	Remember
	Factual	#1						
	Conceptual		#2			#3		
	Procedural							
	Metacognitive	#4						

1: Remember the characters of the story, "Family Adventure."
2: Compare the roles of at least three characters of the story.
3: Evaluate the story according to specific criteria.
4: Recall personal strategies used in understanding the story.

Both the Bloom's taxonomy and the revised taxonomy are not the only existing taxonomic tools for setting our instructional targets. There are other equally useful taxonomies.

Gagne's Taxonomy

One of these is developed by Robert M. Gagne. In his theory of instruction, Gagne desires to help teachers make sound educational decisions so that the probability that the desired results in achieving learning is high. These decisions necessitate the setting of intentional goals that assure learning.

In stating learning intents using Gagne's taxonomy, we can focus on three domains. The cognitive domain includes Declarative (verbal information), Procedural (intellectual skills), and Conditional (cognitive strategies) knowledge. The psychological domain includes affective knowledge (attitudes). The psychomotor domain involves the use of physical movement (motor skills).

Verbal information includes a vast body of organized knowledge that students acquire through formal instructional processes, and other media, such as television, and others. Students understand the meaning of concepts rather than just memorizing them. This condition of learning lumps together the first two cognitive categories of Bloom's taxonomy. Learning intents must focus on differentiation of contents in texts and other modes of communication; chunking the information according to meaningful subsets; remembering and organizing information.

Intellectual skills include procedural knowledge that ranges from Discrimination, to Concrete Concepts, to Defined Concepts, to Rules, and to Higher Order Rules.

Discrimination involves the ability to distinguish objects, features, or symbols. Detection of difference does not require naming or explanation.

Concrete Concepts involve the identification of classes of objects, features, or events, such as differentiating objects according to concrete features, such as shape.

Defined Concepts include classifying new and contextual examples of ideas, concepts, or events by their definitions. Here, students make use labels of terms denoting defined concepts for certain events or conditions.

Rules apply a single relationship to solve a group of problems. The problem to be solved is simple, requiring conformance to only one simple rule.
Higher order rules include the application of a combination of rules to solve a complex problem. The problem to be solved requires the use of complex formula or rules so that meaningful answers are arrived at.

Learning intents stated at this level of cognitive domain must be given attention to abilities to spot distinctive features, use information from memory to respond to intellectual tasks in various contexts, make connections between concepts and relate them to appropriate situations.

Cognitive strategies consist of a number of ways to make students develop skills in guiding and directing their own thinking, actions, feelings, and their learning process as a whole. Students create and hone their metacognitive strategies. These processes help then regulate and oversee their own learning, and consist of planning and monitoring their cognitive activities, as well as checking the outcomes of those activities. Learning intents should emphasize abilities to describe and demonstrate original and creative strategies that students have tried out in various conditions

Attitudes are internal states of being that are acquired through earlier experience of task engagement. These states influence the choice of personal response to things, events, persons, opinions, concepts, and theories. Statements of learning intents must establish a degree of success associated with desired attitude, call for demonstration of personal choice for actions and resources, and allow observation of real-world and human contexts.

Motor Skills are well defined, precise, smooth and accurately timed execution of performances involving the use of the body parts. Some cognitive skills are required for the proper execution of motor activities. Learning intents drawn at this domain should focus on the execution of fine and well-coordinated movements and actions relative to the use of known information, with acceptable degree of mastery and accuracy of performance.

Stiggins and Conklin's Taxonomy

Another taxonomic tool is one developed by Stiggins & Conklin (1992), which involves categories of learning as bases in stating learning intents.

Knowledge. This includes simple understanding and mastery of a great deal of subject matter, processes, and procedures. Very fundamental to the succeeding stages of learning is the knowledge and simple understanding of the subject matter. This learning may take the form of remembering facts, figures, events, and other pertinent information, or describe, explain, and summarize concepts, and cite examples. Learning intents must endeavor to develop mastery of facts and information as well as simple understanding and comprehension of them.

Reasoning. This indicates ability to use deep knowledge of subject matter and procedures to make defensible reason and solve problems with efficiency. Tasks under this category include critical and creative thinking, problem solving, making judgments and decisions, and other higher order thinking skills. Learning

intents must, therefore, focus on the use of knowledge and simple understanding of information and concepts to reason and solve problems in contexts.

Skills. This highlights the ability to demonstrate skills to perform tasks with acceptable degree of mastery and adeptness. Skills involve overt behaviors that show knowledge and deep understanding. For this category, learning intents have to take particular interest in the demonstration of overt behaviors or skills in actual performance that requires procedural knowledge and reasoning.

Product. In this area, the ability to create and produce outputs for submission or oral presentations is given importance. Because outputs generally represent mastery of knowledge, deep understanding, and skills, they must be considered as products that demonstrate the ability to use those knowledge and deep understanding, and employ skills in strategic manner so that tangible products are created. For the statement of learning intents, teachers must state expected outcomes, either process- or product-oriented.

Affect. Focus is on the development of values, interests, motivation, attitudes, self-regulation, and other affective states. In stating learning intents on this category, it is important that clear indicators of affective behavior can easily be drawn from the expected learning tasks. Although many teachers find it difficult to determine indicators of affective learning, it is inspiring to realize that it is not impossible to assess it.

These categories of learning by Stiggins and Conklin are helpful especially if your intents focus on complex intellectual skills and the use of these skills in producing outcomes to increase self-efficacy among students. In attempting to formulate statements of learning outcome at any category, you can be clear about what performance you want to see at the end of the instruction. In terms of assessment, you would know exactly what to do and what tools to use in assessing learning behaviors based on the expected performance. Although stating learning outcomes at the affective category is not as easy to do as in the knowledge and skill categories, but trying it can help you approximate the degree of engagement and motivation required to perform what is expected. Or if you would like to also give prominence to this category without stating another learning intent that particularly focus on the affective states, you might just look for some indicators in the cognitive intents. This is possible because knowledge, skills, and attitudes are embedded in every single statement of learning intent.

Marzano's Dimension of Learning

Another alternative guide for setting the learning targets is one that had been introduced to us by Robert J. Marzano in his Dimensions of Learning (DOL). As a taxonomic tool, the DOL provides a framework for assessing various types of knowledge as well as different aspects of processing which comprises six levels of learning in a taxonomic model called the new taxonomy (Marzano & Kendall, 2007). These levels of learning are categorized into different systems.

The Cognitive System. The cognitive system includes those cognitive processes that effectively use or manipulate information, mental procedures and psychomotor procedures in order to successfully complete a task. It indicates the first four levels of learning, such as:

Level 1: Retrieval. In this level of the cognitive system students engage some mental operations for recognition and retrieval of information, mental procedure, or psychomotor procedure. Students engage in recognizing, where they identify the characteristics, attributes, qualities, aspects, or elements of information, mental procedure, or psychomotor procedure; recalling, where they remember relevant features of information, mental procedure, or psychomotor procedure; or executing, where they carry out a specific mental or psychomotor procedure. Neither the understanding of the structure and value of information nor the how's and why's of the mental or psychomotor procedure is necessary.

Level 2: Comprehension. As the second level of the cognitive system, comprehension includes students' ability to represent and organize information, mental procedure or psychomotor procedure. It involves symbolizing where students create symbolic representation of the information, concept, or procedures with a clear differentiation of its critical and noncritical aspects; or integrating, where they put together pieces of information into a meaningful structure of knowledge or procedure, and identify its critical and noncritical aspects.

Level 3: Analysis. This level of the cognitive system includes more manipulation of information, mental procedure, or psychomotor procedure. Here students engage in analyzing errors, where they spot errors in the information, mental procedure, or psychomotor procedure, and in its use; classifying the information or procedures into general categories and their subcategories; generalizing by formulating new principles or generalizations based on the information, concept, mental procedure, or psychomotor procedure; matching components of knowledge by identifying important similarities and differences between the components; and specifying applications or logical consequences of the knowledge in terms of what predictions can be made and proven about the information, mental procedure, or psychomotor procedure.

Level 4: Knowledge Utilization. The optimal level of cognitive system involves appropriate use of knowledge. At this level, students put the information, mental procedure, or psychomotor procedure to appropriate use in various contexts. It allows for investigating a phenomenon using certain information or procedures, or investigating the information or procedure itself; using information or procedures in experimenting knowledge in order to test hypotheses, or generating hypotheses from the information or procedures; problem solving, where students use the knowledge to solve a problem, or solving a problem about the knowledge itself; and decision making, where the use of information or procedures help arrive at a decision, or decision is made about the knowledge itself.

The Metacognitive System. The metacognitive system involves students' personal agency of setting appropriate goals of their learning and monitoring how they go through the learning process. Being the 5th level of the new taxonomy, the metacognitive system includes those learning targets as specifying goals, where students set goals in learning the information or procedures, and make a plan of action for achieving those goals; process monitoring, where students monitor how they go about the action they decided to take, and find out if the action taken effectively serves their plan for learning the information or procedures; clarity monitoring, where students determine how much clarity has been achieved about the knowledge in focus; and accuracy monitoring, where students see how accurately they have learned about the information or procedures.

The Self System. Placed at the highest level in the new taxonomy, the Self System is the level of learning that sustains students' engagement by activating some motivational resources, such as their self-beliefs in terms of personal competence and the value of the task, emotions, and achievement-related goals. At this level, students reason about their motivational experiences. They reason about the value of knowledge by examining importance of the information or procedures in their personal lives; about their perceived competence by examining efficacy in learning the information or procedures; about their affective experience in learning by examining emotional response to the knowledge under study; about their overall engagement by examining motivation in learning the information or procedures.

In each system, three dimensions of knowledge are involved, such as information, mental procedures, and psychomotor procedures.

Information

The domain of informational knowledge involves various types of declarative knowledge that are ordered according to levels of complexity. From its most basic to more complex levels, it includes vocabulary knowledge in which meaning of words are understood; factual knowledge, in which information constituting the characteristics of specific facts are understood; knowledge of time sequences, where understanding of important events between certain time points is obtained; knowledge of generalizations of information, where pieces of information are understood in terms of their warranted abstractions; and knowledge of principles, in which causal or correlational relationships of information are understood. The first three types of informational knowledge focus on knowledge of informational details, while the next two types focus on informational organization.

Mental Procedures

The domain of mental procedures involves those types of procedural knowledge that make use of the cognitive processes in a special way. In its hierarchic structure, mental procedures could be as simple as the use of single rule in which production is guided by a small set of rules that requires a single action. If single rules are combined into general rules and are used in order to carry out an action, the mental procedures are already of tactical type, or an algorithm,

especially if specific steps are set for specific outcomes. The macroprocedures is on top of the hierarchy of mental procedures, which involves execution of multiple interrelated processes and procedures.

Psychomotor Procedures

The domain of psychomotor procedures involves those physical procedures for completing a task. In the new taxonomy, psychomotor procedures are considered a dimension of knowledge because, very similar to mental procedures, they are regulated by the memory system and develop in a sequence from information to practice, then to automaticity (Marzano & Kendall, 2007).

In summary, the new taxonomy of Marzano and Kendal (2007) provides us with a multidimensional taxonomy where each system of thinking comprises three dimensions of knowledge that will guide us in setting learning targets for our classrooms. Table 5 shows the matrix of the thinking systems and dimensions of knowledge.

Table 5
Thinking Systems and Dimensions of Knowledge

Systems of Thinking	Dimensions of Knowledge		
	Information	Mental Procedure	Psychomotor Procedure
Level 6 (Self System)			
Level 5 (Metacognitive System)			
Level 4: Knowledge Utilization (Cognitive System)			
Level 3: Analysis (Cognitive System)			
Level 2: Comprehension (Cognitive System)			
Level 1: Retrieval (Cognitive System)			

De Bono's Six Thinking Hats

Now, if you wish to explore on other alternative tools for setting your learning objectives, here's another help for us to make our learning intents target on the more complex learning outcomes, this one from Edward de Bono (1985). There are six thinking hats, each of which is named for a color that represents a specific perspective. When these hats are "worn" by the student, information, issues, concepts, theories, and principles are viewed in ways that are descriptive of mnemonically associated perspectives of the different hats. Let's say that your learning intent necessitates students to mentally put on a white hat whose descriptive mental processes include gathering of information and thinking how it can be obtained, and the emotional state is neutral, then learning behaviors may be classifying facts and opinions, among others. It is essential to be conscious that

each hat that represents a particular perspective involves a frame of mind as well as an emotional state. Therefore, the perspective held by the students when a hat is mentally worn, would be a composite of mental and emotional states. Below is an attempt to summarize these six thinking hats.

Table 6
Summative map of the Six Thinking Hats

	THE HATS					
	WHITE	**RED**	**BLACK**	**YELLOW**	**GREEN**	**BLUE**
Perspective	Observer	Self & others	Self & others	Self & others	Self & others	Observer
Representation	White paper, neutral	Fire, warmth	Stern judge wearing black rode	Sunshine, optimism	Vegetation	Sky, cool
Descriptive Behavior	Looking for needed objective facts and information, including how these can be obtained	Presenting views, feelings, emotions, and intuition without explanation or justification	Judging with a logical negative view, looking for wrongs & playing the devil's advocate	Looking for benefits and productivity with logical positive view, seeing what is good in anything	Exploring possibilities & making hypotheses, composing new ideas with creative thinking	Establishing control of the process of thinking and engagement, using metacognition

These six thinking hats are beneficial not only in our teaching episodes but also in the learning intents that we set for our students. If qualities of thinking, creative thinking communication, decision-making, and metacognition are some of those that you want to develop in your students, these six thinking hats could help you formulate statements of learning intents that clearly set the direction of learning. Added benefits would be that when your intents are stated in the planes these hats, the learning episodes can be defined easily. Consequently, assessment is made more meaningful.

Discussion

In writing statements of learning intents for the subjects and courses, the aim is to state behavior outcomes to which teaching efforts are devoted, so that, from these statements, teachers can design specific tasks in the learning episodes for our students to engage into. However, it is needed to make sure that these statements will have to be set with proper level of generality so that they don't oversimplify or complicate the outcome.

A statement of intent could have a rather long range of generality so that many sub-outcomes may be indicated. Learning intents that are stated in general terms will need to be defined further by a sample of the specific types of student performance that characterize the intent. In doing this, assessment will be easy when the performance is clearly defined. Unlike the general statements of intent that may permit the use of not-so-active verbs such as know, comprehend, understand, and so on, the specific ones use active verbs in order to define specific behaviors that will soon be assessed. The selection of these verbs is very vital in the preparation of a good statement of learning intent. Three points to

remember might help select active verbs (1) See that the verb clearly represents the desired learning intent, (2) Note that the verb precisely specifies acceptable performance of the student, (3) Make sure that the verb clearly describes relevant assessment to be made within or at the end of the instruction.

Although general intents give us an idea of the general direction of expected outcomes, it might be confused as to what specific behaviors of knowing will be assessed. Therefore, it is necessary to draw some representative sample of specific learning intent so that we will let students:

- write a definition of particular scientific term
- identify the synonym of the word
- give the term that fits a given description
- present an example of the term
- represent the term with a picture
- describe the derivation of the term
- identify symbols that represent the term
- match the term with concepts
- use the term in a sentence
- describe the relationship of terms
- differentiate between terms
- use the term in

If these behaviors are stated completely as specific statements of learning intent, teachers can have a number of specific outcomes. To make specifically defined outcomes, the use of active verbs is helpful. If more specificity is desired, statements of condition and criterion level can be added to the learning intents.

The lesson plan may allow the use of moderately specific statements of learning intents, with condition and criterion level briefly stated. In doing assessment, however, these intents will have to be broken down to their substantial details, such that the condition and criterion level are specifically indicated. Note that it is not necessarily about choosing which one statement is better than the other. We can use them in planning for our teaching.

If the instructional activities or learning episodes and assessment are well anchored on the intents guided by a clear taxonomy, direction of teaching and learning is better facilitated.

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